

In the Claims

Please amend Claims 1, 19, 24 and 36-40. *Amendments to the claims are indicated in the attached "Marked Up Version of Amendments" (pages i - iv).*

- B1
A
1. (Amended) A method of storing data values in a multidimensional database comprising:
- identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;
 - identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;
 - attributing a plurality of data values to each of the attributes; and
 - storing the data values on a storage medium based on the data values indicated by the hierarchy, such that associated values are likely to be retrieved simultaneously.

- sub C
- A
19. (Amended) A method of storing data values in a multidimensional database comprising :
- identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;
 - identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;
 - attributing a plurality of data values to each of the attributes;
 - storing the data values on a storage medium based on the data values indicated by the hierarchy and stored on the storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, the data values further comprising aggregate values and detail values;
 - aggregating at least one of the dimensions having a hierarchy by traversing each of the aggregate values included in the dimension; and
 - including, in an aggregation total, the associated data values corresponding to the aggregate value.

- B2
A3
24. (Amended) A system for storing and accessing a multidimensional database comprising:
- a memory having a cache and a database engine;

a mass storage device in communication with the memory and operable to store a plurality of data values;

a kernel included in the database engine, wherein the kernel is operable to manipulate data values between the memory, the cache, and the mass storage device; and

a sparsity manager included in the database engine, wherein the sparsity manager is operable to determine a storage organization of the data values from a predetermined hierarchy such that associated values are likely to be retrieved simultaneously.

36. (Amended) A computer program product having computer program code for storing data values in a multidimensional database comprising:

computer program code for identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;

computer program code for identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;

computer program code for attributing a plurality of data values to each of the attributes; and

computer program code for storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, such that associated values are likely to be retrieved simultaneously.

37. (Amended) A computer data signal having program code for storing data values in a multidimensional database comprising:

program code for identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;

program code for identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;

program code for attributing a plurality of data values to each of the attributes;
and

program code for storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, such that associated values are likely to be retrieved simultaneously.

- B-3
- AA
38. (Amended) A system for storing data values in a multidimensional database comprising:
- means for identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations;
 - means for identifying a hierarchy of attributes within at least one of the dimensions, wherein the hierarchy is indicative of an association between the attributes;
 - means for attributing a plurality of data values to each of the attributes; and
 - means for storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes as indicated by the hierarchy, such that associated values are likely to be retrieved simultaneously.
39. (Amended) A method of storing data values in a multidimensional database comprising:
- identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of attributes associated with a data value;
 - identifying a hierarchy within at least one of the dimensions, wherein the hierarchy is indicative of an association between the plurality of attributes;
 - assigning a plurality of data values to each of the plurality of attributes;
 - storing the data values on a storage medium in proximity to associated data values, wherein the associated data values are assigned to associated attributes as indicated by the hierarchy, such that associated values are likely to be retrieved simultaneously.